

REMARKS

Claims 1, 4-12, 14-21, 23, and 25-29 are pending in this application, with claims 1 and 19 being in independent form. Claims 1, 4-12, 14-21, 23, and 25-27 have been amended. Claims 2, 3, 13, 22, and 24 have been canceled without prejudice or disclaimer of subject matter. Claims 28 and 29 have been added.

As an initial matter, the Examiner has withdrawn claims 19-27 (Group II), stating, at page 2 of the Office Action, that Applicants' traversal of the restriction requirement was not sufficient. Consequently, the Examiner required Applicants to either cancel the non-elected claims of Group II or take other appropriate action. Instead of canceling the claims of Group II, Applicants have amended those claims such that they have corresponding special technical features as the claims in Group I. Accordingly, examination of the Group II claims is respectfully requested.

Claims 1-18 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

First, cancellation of claims 2, 3, and 13 renders the rejections of those claims moot.

The remaining claims have been carefully reviewed and amended as deemed necessary to ensure that they conform fully to the requirements of Section 112, second paragraph, with special attention to the points raised in the Office Action. It is believed that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

Claims 1-12 and 15-18 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent 6,242,079 to Mikado; and claims 13 and 14, as being obvious from Mikado in view of U.S. Patent No. 6,500,350 to Hunt.

First, cancellation of claims 2, 3, and 13 renders the rejections of those claims moot.

Applicants submit that independent claims 1 and 19, together with the claims dependent therefrom, are patentably distinct from the cited references for at least the following reasons.

Claim 1 is directed to a method for manufacturing a printed circuit board element. The method includes providing a printed circuit board substrate with at least one conductor layer, structuring the conductor layer, and roughening the whole structured conductor layer in the surface area. The method also includes applying a noble metal layer on the whole structured, roughened conductor layer, the surface of the noble metal layer being provided with a corresponding roughness. The method further includes applying at least one electric PTF component in the area of the surface-roughened noble metal layer by imprinting.

Among the notable features of claim 1 are (1) applying a noble metal layer on the whole structured, roughened conductor layer, the surface of the noble metal layer being provided with a corresponding roughness, and (2) applying at least one electric PTF component in the area of the surface-roughened noble metal layer by imprinting.

According to the disclosure in the introductory part of the present application, in particular at the middle of page 1, the bottom of page 2, or the bottom of page 5 to the bottom of page 6, the problem underlying the present invention is a combined problem insofar as a barrier layer is to be provided in the conducting zone of imprinted PTF components, and that, in the case in which such barrier layer comprised by a noble metal is provided in the area of the whole structured conductor layer, nevertheless a solution is to be found for the problem that good adhesion of further resin layers (see page 6 top) should not be hindered. Furthermore, a simple production, in particular simplified method steps, should be rendered

possible.

By virtue of the features of claim 1, a simple and efficient method for manufacturing printed circuit board elements can be attained. Such method is not only novel but is also non-obvious in view of the cited prior art in particular, since the cited prior art does not disclose the above-mentioned combined problem, with diverging partial problems, and in any event does not teach or suggest a step of imprinting electric PTF components on a roughened structured conductor layer covered by a noble metal layer having a corresponding roughness, as in claim 1. Here, Applicants note in particular that Hunt only refers to the formation of *thin film* resistors on plain underlying layers but not to the application of a PTF component, that is, a thick film layer, and in particular the application of such a component by imprinting on the surface-roughened underlying layer, specifically a noble metal layer having a roughened surface.

Accordingly, bearing in mind the teaching of providing specific roughened surfaces, for instance “roughened surface” 35 of Mikado, there cannot be found any teaching or suggestion to provide a polymer thick film component on such a roughened surface provided with a noble metal layer having a corresponding roughened surface. In more detail, Mikado only discusses providing such roughened structured conductor layer surface 35 (see Fig. 23 of that patent), and to apply thereon a tin layer (see column 22, line 21) and, thereafter, an adhesive layer 37 (see Fig. 24). Even if there may be a general hint to the use of noble metal (for example in column 3, line 37), Applicants note that, in effect, the disclosure is directed to the use of a tin layer, and this in combination with the adhering of an adhesive material, whereas, in the present subject matter, in particular the application of further circuit board elements with a resin substrate is desired. Furthermore, it is of particular note that in Mikado,

no specific disclosure is given as to how electric components are applied to the structured, possibly roughened conductor layer, and, in particular, no PTF components are mentioned, and no imprinting technique for applying such components is disclosed.

Again, Applicants submit that it cannot be considered obvious to apply a specific electric component on such a roughened structured conductor layer, in particular by imprinting; here, Hunt further discusses forming a patterned layer of resistive material which in particular is deposited by vapor deposition but not by imprinting. Such type of application (imprinting) would not be taken into consideration *a priori* by a person having ordinary skill in the art in view of the roughened character of the underlying metal layer.

Accordingly, claim 1 is seen to be clearly allowable over the cited prior art.

Independent claim 19 recites features which are similar in many relevant respects to those discussed above in connection with claim 1. Accordingly, claim 19 is believed to be patentable for at least the same reasons as discussed above in connection with claim 1.

The other claims in this application are each dependent from one or the other of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration or reconsideration, as the case may be, of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Respectfully Submitted

A handwritten signature in black ink, appearing to read 'Ra DiPerna', written over a horizontal line.

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